

Appln No.: 10/065,545
Amendment Dated: March 24, 2004
Reply to Office Action of January 21, 2004

REMARKS/ARGUMENTS

This is in response to the Office Action mailed January 21, 2004 for the above-captioned application. Reconsideration and further examination are respectfully requested.

Claims 1-75 are examined in this application. Claims 1 and 38 have been amended to include a limitation that the potassium salt of a perfluoroalkane sulfonate and the sodium salt of toluene sulfonic acid are present in a ratio which provides synergistic effectiveness as a flame-retardant additive for high melt strength polycarbonate. This limitation is supported, *inter alia*, in original claim 57.

Claims 1-75 stand rejected under 35 USC § 103 as obvious over the combination of US Patent No. 3,775,367 of Nouvertne, in view of US Patent No. 3,933,734 of Mark. The Examiner argues that Nouvertne discloses use of one type of compound, namely fluoroalkane sulfonates such as potassium perfluorobutane sulfonate as a flame retardant, and that Mark discloses the use of metal salts of aromatic sulfonic acids as a flame retardant. Based on these disclosures the Examiner asserts that the ordinary practitioner would have found it "plausible" and therefore obvious to utilize more than one such salt in formulating a flame retardant composition. The Examiner further asserts that the two types of salts are shown to have equivalent functionalities. Applicants respectfully traverse this rejection.

Applicants respectfully remind the Examiner that in considering issues of obviousness of a composition, the properties of that composition as disclosed in the specification must be taken into account in determining whether a *prima facie* case of obviousness exists. *In re Margolis*, 228 U.S.P.Q. 940, 942 (Fed. Cir. 1986). It does not appear that the Examiner has done this in the present case. Furthermore, the limitations of each claim under examination must be considered individually. Here, while the Examiner has rejected 75 claims, the only limitations discussed are those of claim 1. Thus, for these reasons, the rejection is both incomplete and in error and should be withdrawn.

Addressing the first issue, it is pointed out in the present specification, and demonstrated in the examples, that the two materials recited in the claims are not merely additive in their flame reatradant effect but are in fact synergistic. While synergism is not required for a finding of non-obviousness, evidence of synergistic effects is probative that a claimed combination is not obvious over teachings of the individual components. In the present case, all of the claims expressly state that the ratio of the two flame retardants is one that provides a synergistic effectiveness. Nothing in the cited art suggests that the combination of flame retardants proposed by the Examiner would be anything better than additive.

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To illustrate this point, the Examiner is directed to the Examples in the present application. As reflected in each example, combinations of the two flame retardants did not always yield acceptable flame retardant performance. For example, a comparison of Batch 2-2, and Batch 2-5 is informative. In batch 2-2, the amount of Rimar salt was .009 and the amount of NaTS was 0.05. The result was effective flame retardance. In Example 2-5, the amount of Rimar salt was the same, but the amount of NaTS was higher, i.e., 0.11. The flame retardance of batch 2-5 was poor, even though **more** flame retardant was present. Nothing in the art suggests this result, or provides any teaching of the ratios that can achieve the synergistic effect.

Applicants further point out that claim 15 which recites the addition of the flame retardants as a single composition, and claim 28 which states that this is an aqueous composition are further distinguished from that which the Examiner asserts is obvious. In particular, Applicants direct the Examiner's attention to Batches 1-1 and 1-2. In these batches the compositions are the same, but the flame retardance achieved is quite different. These two batches were formulated by adding the two FR additives - RIMAR and NaTS - in the solid powder form along with the other additives. Since the additive loading is so small (0.005 RIMAR, 0.1 NaTS), it does not disperse uniformly in the total resin matrix causing the variance in the Flame Out Times (FOT) during the actual FR test.

To alleviate the issue of non-uniform dispersion all the formulations of Batches 2-1 to 2-5 were done using individual polycarbonate (PC) based powder concentrates of the two additives - by dissolving each additive separately in water and dispersing the individual water solutions in PC powder and blending them to prepare the separate powder concentrates. This allowed more uniform dispersion of the two additives in the PC resin matrix, thus resulting in more consistent FR results. The inventors further improved on the dispersion issue, however, by dissolving both the additives together in water solution - rather than doing them separately, as described above - and forming one PC powder concentrate, rather than separate PC powder concentrates as discussed above. This further improvement is exemplary of both claims 15 and 28. The combined concentrate was used in Batch 6-1 which exhibited very good flame performance even though the loading of both the additives were miniscule (0.009 RIMAR, 0.015 NaTS).

Nothing in the art cited by the Examiner relates to or suggests the desirability of the use of a combination of the two flame retardants, as opposed to individual additives. Thus method claims 15 and 28, and the claims dependent thereon, and additive claims 57-75, are not suggested by the art for this additional reason.

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For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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